

## Claims

1. A power system for a dual-motor hybrid vehicle, comprising: an internal combustion engine (1), a clutch (3), a stepped transmission (4), a drive shaft, a brake system and driving wheels (7), wherein the power system further comprises:

    a main motor (5), a rotor shaft of the main motor connected with a output shaft of the stepped transmission (4);

    an auxiliary motor (2), a rotor shaft of the auxiliary motor connected with a crankshaft of the internal combustion engine (1) via a drive mechanism;

    the main motor and the auxiliary motor are electrically connected with a power battery (8), and

    an entire vehicle controller, which can make the power system work in the following operation modes automatically: 1) when the vehicle is in low-speed running operation condition, the system works in a pure electrical driving mode in which the internal combustion engine (1) does not work, and only the main motor (5) drives the drive shaft, or the system works in a series driving mode in which the internal combustion engine only drives the auxiliary motor (2) that generates electric power, and the generated electric power is transmitted to the main motor (5) via the power battery (8) to drive the drive shaft; 2) when the vehicle is in full-accelerating operation condition, the system works in a parallel driving mode in which both the internal combustion engine (1) and the main motor (5) drive the vehicle simultaneously; 3) when the vehicle is in braking and decelerating operation condition, the system works in an energy recovery mode in which the main

motor (5) is controlled to brake and generate electric power, and the power battery (8) is recharged; 4) when the vehicle is during transmission shifting, the system works in auxiliary-driving mode in which the main motor (5) drives the vehicle auxiliary during shifting; 5) when the vehicle is in idling stop operation condition, the system works in an idling stop mode in which the internal combustion engine (1) stops working, and 6) when the vehicle is in normal driving operation condition, the system works in normal running mode in which the internal combustion engine drives the vehicle independently.

2. The power system of claim 1, wherein the rotor shaft of the main motor (5) is connected with the output shaft of the transmission (4) via a drive mechanism.

3. The power system of claim 1 or claim 2, wherein the drive mechanism includes one of shaft drive means, belt drive means, chain drive means, gear drive means, clutch drive means or a combination thereof.

4. The power system of claim 1, wherein the main motor and the auxiliary motor are connected with the power battery via a controller, a control unit and a loop circuit of a distribution box.

5. The power system of claim 1, wherein the main motor further includes two motors that are arranged between the left or right driving wheels and the differential gear, respectively, the main motor is arranged on other drive shaft.

6. The power system of claim 1, wherein the entire vehicle controller can make the power system work in starting mode in which the vehicle is driven automatically by the main motor (5) when the vehicle is being started.